SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Tetrahydrolinalool
Substance name	:	3,7-Dimethyloctan-3-ol
CAS-No.	:	78-69-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Substance/Mixture	:	Ingredient for fragrances, Ingredient for flavours

1.3 Details of the supplier of the safety data sheet

Company	:	DSM Nutritional Products Ltd. PO Box 2676 CH-4002 Basel
Telephone	:	+41618158888
Telefax	:	+41618157253
E-mail address Responsible/issuing person	:	sds.nutritionalproducts@dsm.com

1.4 Emergency telephone number

+41 62 866 2314

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

CAUTION	
Appearance	liquid
Colour	colourless
Odour	floral, citrous-like

GHS Classification

Flammable liquids	:	Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A

GHS label elements

Hazard pictograms :

Signal word	:	Warning
Hazard statements	:	H227 Combustible liquid. H315 Causes skin irritation. H319 Causes serious eye irritation.
Precautionary statements	:	**Prevention:** P264 Wash skin thoroughly after handling. P280 Wear protective gloves/ eye protection/ face protection.

Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.

Potential Health Effects

Primary Routes of Entry	:	Skin Absorption
Skin	:	May cause skin irritation.
Eyes	:	May cause eye irritation.
Aggravated Medical Condition	:	None known.
Symptoms of Overexposure	:	No specific symptoms known.

Additional hazards and advice

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms	:	3-Octanol, 3,7-dimethyl- THLL
Brief description of the product	:	Substance
Molecular formula	:	C10 H22 O

Hazardous components

Component	CAS-No.	Weight percent
3,7-dimethyloctan-3-ol	78-69-3	90 - 100

SECTION 4. FIRST AID MEASURES

General advice	:	Move out of dangerous area. Show this safety data sheet to the doctor in attendance.
If inhaled	:	Move to fresh air. Consult a physician after significant exposure.
In case of skin contact	:	Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. If symptoms persist, call a physician.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye.

Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
Obtain medical attention.

Most important symptoms and effects, both acute and delayed : No specific symptoms known.

Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Flammable properties

Flash point : 171 °F (77 °C)
Method: DIN 51758

Ignition temperature : 365 °C (at 1,013 hPa, DIN 51794)

Lower explosion limit : 1.1 %(V)

Upper explosion limit : 6.5 %(V)

Flammability (solid, gas) : The substance or mixture does not emit flammable gases in contact with water.

Fire fighting

Suitable extinguishing media : Alcohol-resistant foam
Dry chemical
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : High volume water jet

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Protective equipment and precautions for firefighters

Specific hazards during fire-fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.

Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	Avoid contact with skin and eyes. Ensure material transfers are under containment or extract ventilation. For personal protection see section 8. Dispose of rinse water in accordance with local and national regulations. Smoking, eating and drinking should be prohibited in the application area.
Advice on protection against fire and explosion	:	Take necessary action to avoid static electricity discharge. Product will burn under fire conditions.
Conditions for safe storage	:	Protect against light. Protect from humidity. Keep container tightly closed and dry. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Storage temperature	:	< 77 °F (< 25 °C)

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Hazardous components without workplace control parameters

Components	CAS-No.
3,7-dimethyloctan-3-ol	78-69-3

Personal protective equipment

Respiratory protection	:	In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit. In the case of vapour formation use a respirator with an approved filter.
Hand protection		
Material	:	Nitrile rubber
Remarks	:	Consider the hazard characteristics of this product and any special workplace conditions when selecting the appropriate

type of protective gloves.

Eye protection	:	Safety glasses with side-shields
Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	:	liquid
Colour	:	colourless
Odour	:	floral, citrous-like
Odour Threshold	:	No information available.
pH	:	No data available
Solidification point	:	-56 °C
Boiling point/boiling range	:	197 °C (at 1,013 hPa)
Flash point	:	77 °C (closed cup, DIN 51758)
Evaporation rate	:	not determined
Flammability (solid, gas)	:	The substance or mixture does not emit flammable gases in contact with water.
Lower explosion limit	:	1.1 %(V)
Upper explosion limit	:	6.5 %(V)
Vapour pressure	:	0.111 hPa (at 20 °C) 3 hPa (at 50 °C)
Relative vapour density	:	not determined
Density	:	0.825 g/cm3 (at 25 °C)
Water solubility	:	0.32 g/l (25 °C)
Solubility in other solvents	:	various organic solvents: soluble
Partition coefficient: n-octanol/water	:	log Pow 3.3 (20 - 23 °C; OECD Test Guideline 117)
Ignition temperature	:	365 °C (at 1,013 hPa, DIN 51794)
Thermal decomposition	:	No data available
Viscosity, dynamic	:	11.1 mPa.s (at 25 °C)
Explosive properties	:	Not explosive
Oxidizing properties	:	Not oxidizing

9.2 Other information

Molecular weight	:	158.29 g/mol
Surface tension	:	28 mN/m (20 °C)

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No hazards to be specially mentioned.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Possible incompatibility with materials listed under section 10.5.
Conditions to avoid	:	Heat
Incompatible materials	:	Strong acids and strong bases Strong oxidizing agents
Hazardous decomposition products	:	No decomposition if used as directed.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	:	Skin Absorption
Acute oral toxicity	:	LD50 (Rat): 8,270 mg/kg
	:	LD50 (Mouse): 4,500 mg/kg
Acute inhalation toxicity	:	LC0 (Rat, 8 h): 0.885 mg/l
Acute dermal toxicity	:	LD50 (Rat): > 5,000 mg/kg
Skin irritation	:	Skin irritation (In vitro study, Skin corrosion: Human Skin Model Test)
Eye irritation	:	Eye irritation (Rabbit)
Sensitisation	:	Did not cause sensitization. (human, Maximisation Test)
	:	Does not cause skin sensitisation. (Guinea pig) Test performed using a similar product.
Genotoxicity in vitro	:	not mutagenic, not genotoxic (Various test systems)
Carcinogenicity	:	This information is not available.

IARC		No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA		No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP		No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
Reproductive toxicity	:	No indication for adverse effects on fertility known. NOAEL: 365 mg/kg bw/d (Rat, Oral)
	:	Test performed using a similar product.
Teratogenicity	:	not teratogenic not embryotoxic Test performed using a similar product. NOEL: 1,000 mg/kg bw/d (Rat, Oral, OECD Test Guideline 414)
STOT - single exposure (Acute exposure)	:	The substance or mixture is not classified as specific target organ toxicant, single exposure.
STOT - repeated exposure	:	NOAEL (Oral, Rat) : 117 mg/kg bw/d Subacute toxicity study (28 days) Test performed using a similar product. (OECD Test Guideline 407)
	:	NOAEL (Dermal, Rat) : 250 mg/kg bw/d Sub-chronic toxicity study (90-day) Test performed using a similar product.
Further information	:	May cause irritation of respiratory tract.
Aspiration toxicity	:	No aspiration toxicity classification

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	:	Danio rerio (zebra fish) LC50 (96 h) 8.9 mg/l (nominal concentration) (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	:	Daphnia magna (Water flea) EC50 (48 h) 14.2 mg/l (OECD Test Guideline 202)

Toxicity to algae	:	Desmodesmus subspicatus (green algae) ErC50 (72 h) 21.6 mg/l (nominal concentration) (DIN 38412)
	:	ErC10 (72 h) 9.5 mg/l (nominal concentration) (DIN 38412)
Toxicity to bacteria	:	Pseudomonas putida EC50 (0.5 h) 1,000 mg/l (DIN 38412)
	:	EC10 (0.5 h) 450 mg/l (DIN 38412)

Persistence and degradability

Biodegradability	:	Readily biodegradable 60 - 70 % (28 d) (OECD Test Guideline 301F)
Photodegradation	:	27 d (Air, 25 °C)

Bioaccumulative potential

Bioaccumulation	:	Bioaccumulation is unlikely.
Partition coefficient: n-octanol/water	:	log Pow 3.3 (20 - 23 °C ; OECD Test Guideline 117)

Mobility in soil

Mobility	:	Not expected to adsorb on soil.
Distribution among environmental compartments	:	Adsorption/Soil log Koc 1.75 (calculated value)
Surface tension	:	28 mN/m (20 °C)

Other adverse effects

Regulation	40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information	:	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.Toxic to aquatic organisms.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	User must determine if any wastes generated exhibit hazardous characteristics as per 40 CFR Part 261 or other national / local legislation. Discharge into the environment must be avoided. Do not contaminate ponds, waterways or ditches with chemi-

cal or used container.
Do not dispose of waste into sewer.
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging : Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulation

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

49 CFR

UN/ID/NA number	:	NA 1993
Proper shipping name	:	Combustible liquid, n.o.s. (3,7-dimethyloctan-3-ol)
Class	:	CBL
Packing group	:	III
Labels	:	None
ERG Code	:	128
Marine pollutant	:	no

Special precautions for user

Above applies only to containers over 119 gallons or 450 liters. Not regulated if shipped in packages less than or equal to 119 gallons (450 liters).

Remarks : 49CFR: no dangerous good in non-bulk packaging

SECTION 15. REGULATORY INFORMATION

TSCA list
No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

3,7-dimethyloctan-3-ol	78-69-3	90 - 100 %

New Jersey Right To Know

3,7-dimethyloctan-3-ol	78-69-3	90 - 100 %

SECTION 16. OTHER INFORMATION

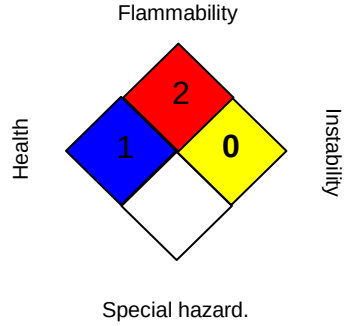
Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of

Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Further information

NFPA:



HMIS III:

HEALTH	2
FLAMMABILITY	2
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Abbreviations: ACGIH = American Conference of Governmental Industrial Hygienists. CERCLA = Comprehensive Environmental Response, Compensation and Liability Act. CFR = Code of Federal Regulations. CPR = Controlled Products Regulations. DSL = Canadian Domestic Substance List. DOT = Department of Transportation. EINECS = European Inventory of New and Existing Chemical Substances. EPA = Environmental Protection Agency. HCS = Hazardous Communication Standard. HEPA = High Efficiency Particulate Air. HMIS = Hazardous Material Identification System. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IMDG = International Maritime Dangerous Good. NFPA = National Fire Protection Association. NIOSH = National Institute of Occupational Safety and Health. NJTSR = New Jersey Trade Secret Registry. NTP = National Toxicology Program. OSHA = Occupational Safety and Health Administration. SARA = Superfund Amendments and Reauthorization Act. TDG = Transportation of Dangerous Goods. TLV = Threshold Limit Value. TSCA = Toxic Substance Control Act. WHMIS = Workplace Hazardous Materials Information System.

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